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ABSTRACT

This study focused on how French children aged 4, 6, and 8 years evaluate the conditions of use for modal expressions marking certainty and uncertainty in discourse. Children were shown films involving verbal interactions during which one of the protagonists produced a target utterance accusing another character of having performed a deed. Each scenario varied in three ways: (1) presence versus absence of the speaker during the deed; (2) assertive form versus modalized form of the utterance; (3) true assertion versus false assertion. Children were asked to attribute an epistemic state of certainty or uncertainty to the speaker. Results show a clear increase from 4 to 6 to 8 years of age in the attribution of uncertainty, and a developmental progression in children's conceptions of the epistemic categories of certainty and uncertainty. Young children have a realistic conception, mainly determined by the truth/falsity of the utterance. At 8 years of age, the two other factors become more important. Children take into account linguistic markers such as modal devices, and show a metalinguistic and relativized conception of epistemic categories. (Author/DJD)

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EPISTEMIC MODALITY IN FRENCH CHILDREN'S DISCOURSE :

CERTAINTY AND UNCERTAINTY

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SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT

Kansas City, Missouri, April 27-30, 1989

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EPISTEMIC MODALITY IN FRENCH CHILDREN'S DISCOURSE: CERTAINTY AND UNCERTAINTY

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ABSTRACT

The present analyses focus on how french children of 4, 6, and 8 years evaluate the conditions of use for modal expressions marking certainty and uncertainty in discourse. They are part of a larger research on the use of epistemic modality in French children's reported speech. Children were shown films involving verbal interactions during which one of the protagonists produced a target utterance accusing another one of having performed a deed (e.g. spilling a cup). Each scenario varied in 3 ways: 1) presence vs absence of the speaker during the deed; 2)assertive form vs modalized form of the utterance(JE CROIS - I think/believe); 3) true assertion vs false assertion. Children were asked to attribute an epistemic state of certainty or uncertainty to the speaker. Results show a clear increase from 4-6 to 8 years in the attribution of uncertainty, and a developmental progression in children's conceptions of the epistemic categories of certainty and uncertainty. Young children have a realistic conception, mainly determined by the truth/falsity of the utterance. At 8 years the two other factors become the most important; children take into account linguistic markers such as modal devices, and show a metalinguistic and relativized conception of epistemic categories.

Epistemic modality in French children's discourse:
certainty and uncertainty

This paper presents analyses of how French children of 4, 6, and 8 years evaluate the conditions of use for modal expressions marking certainty and uncertainty in discourse. These data are part of a larger research project focusing on the development of epistemic modality on the basis of children's interpretation and use of epistemic modality in reported speech (cf. Bassano, Champaud & Hickmann, 1988).

Modality is a linguistic category which provides speakers with means for the expression of "subjectivity", namely for marking their attitudes towards the propositional content of their utterances. Within the rather heterogeneous set of linguistic devices which have modal functions those which mark epistemic modality form a central class. These devices can be used by speakers to mark some degree of certainty in relation to the propositional content of their messages, i.e., their assessment of the truth value of the proposition. For example, speakers can say that they are sure that p, that they believe that p, that it is possible that p, that p must be the case, that they are not sure that p, etc., thereby formulating different judgments which evaluate the truth of the proposition p. This modal subsystem is thus organized around a set of epistemic operators (such as certainty, possibility, probability, etc.), expressed in different languages by various morpho-syntactic devices (such as modal verbs, locutions or auxiliaries, adverbs, inflections, etc.), which can often be used in various ways to mark rather subtle distinctions.

Epistemic modality seems to appear relatively late in children's language develoment in comparison to other types of modality, such as "dynamic" or "deontic" modality (cf. Stephany, 1986). This finding is not surprising if one considers the capacities that are required by the use of these devices. In particular, epistemic modality involve a complex semantic domain, namely the domain of cognitive states and activities or processes. The construction of such a domain in language requires that children acquire the capacity to mark sophisticated semantic and pragmatic distinctions. For example, children must be able to differentiate the properties of certainty versus belief and the properties of different modes

of belief, including the conditions under which various linguistic devices marking such epistemic distinctions are relevant. They must learn that speakers' uses and non uses of such modal devices depend a great deal on the source and strength of the background knowledge about the events talked about, such as: whether they witnessed these events directly, heard about them, made some inferences, etc.

In previous studies on the metalinguistic comprehension of epistemic markings (Bassano 1982; Bassano & Champaud 1983; Champaud & Bassano 1984; Bassano 1985a ; Bassano 1985b; Bassano 1986), we assumed that the development of these devices might be related to particular semantic and pragmatic properties characterizing their relationships with the assertion. The categories which confirm the assertion - particularly certain knowledge, expressed for instance by the form "je sais que" ("I know that")- seem to be basic, while the categories which question the assertion - doubt, expressed in various degrees by opinion modalities such as "je crois que ("I think that"), "peut-être" ("maybe") differenciate only progressively and are mastered later.

The present study focuses on the conditions under which French children of 4, 6, and 8 years attribute to others an epistemic state of certainty ("X is sure that p") or of uncertainty ("X is not sure that p"), as well as the justifications they provide for their attribution of these states.

METHOD

The data were collected in situations where children were asked to narrate films. Children were shown short video films involving verbal interactions among several characters, two animals and two humans. The humans always consisted of a boy and a girl, while the animals differred across films. In each scenario one of the animals performed a target action (e.g. spilling a cup). During a subsequent exchange the boy produced a target utterance in which he attributed the action to one of the two animals. In all films, the boy's target utterance was addressed to the girl, who was always absent when the target action occurred and who asked "what happened?" Different versions of each scenario were constructed,

which varied in three ways: (a) the boy either witnessed the action mentioned in the target utterance or was absent when it happened; (b) the target utterance produced by the boy was either a simple assertion or an assertion modalized by means of the verb CROIRE; (c) the proposition in the target utterance was either true or false, i.e. the boy accused either the animal who had been responsible for the deed or the innocent animal. Examples (1) to (4) illustrate the different types of target utterances for a scenario in which there was a monkey and a rabbit and in which the target action consisted of the monkey spilling the cup.

(1) C'est le singe qui a renversé la tasse
It's the monkey who spilled the cup

(2) Je crois que c'est le singe qui a renversé la tasse
I think it's the monkey who spilled the cup

(3) C'est le lapin qui a renversé la tasse
It's the rabbit who spilled the cup

(4) Je crois que c'est le lapin qui a renversé la tasse
I think that it's the rabbit who spilled the cup

Children were seen individually. They were first asked to narrate the films for a naive interlocutor who had not seen the film, then to answer a series of systematic questions concerning the target utterance and its appropriateness in relation to the speech situation (e.g., "Why does he say ...?", "Is he sure that ...?", "What would you have said?" etc.). In the resulting question-answer sequence children produced a series of judgments concerning epistemic modality.

The analyses presented below concern children's judgments during the question-answer sequence that followed their narratives. During this phase of the task children were invited to attribute an epistemic state to the speaker who had produced the target utterance as a function of various aspects of the speech situation. These judgments were elicited by a question of the type "Is he sure that P?" (where P corresponded to the propo-

sition in the target utterance) (1). Children were then invited to justify explicitly their responses by explaining why they chose to attribute various epistemic states to the characters. These explanatory commments were typically elicited with the question "Why was he sure/not sure?"

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(1) This question was sometimes formulated in a slighlty different way and in a few rare cases the children produced such judgments spontaneously. These variations are ignored in the present analyses which focus on children's choices of different epistemic categories.

RESULTS

1. Children's attribution of an epistemic state to the speaker: basic response categories

Children's responses fell into three categories, to which we refer below as: SURE ACCUSED, SURE OTHER, NOT SURE. The category SURE ACCUSED corresponded to responses of the type "He is sure that it is X", where X denoted the animal which had been accused in the target utterance (2). This reponse category is therefore characterized by the assertion of the predicate SURE which is associated with a complement clause corresponding to the proposition contained in the target utterance. The category SURE OTHER corresponded to responses of the type "He is sure that it is Y", where Y denoted the animal which had not been mentioned in the target utterance. Finally, the category NOT SURE corresponded to responses in which children negated the predicate SURE and thereby attributed to the boy a state of uncertainty in relation to the content of his target utterance (which was either left implicit or explicitly mentioned). For example, consider the target utterance (3) in the scenario described above, i.e., "It's the rabbit who spilled the cup", where the monkey had spilled the cup in the presence of the rabbit: example (5) shows a response of the type SURE ACCUSED, example (6) a response of the type SURE OTHER, and example (7) a response of the type NOT SURE.

(5) SURE ACCUSED:

Il est sûr que c'est le lapin
He is sure that it is the rabbit

(6) SURE OTHER:
Il est sûr que c'est le singe
He is sure that it is the monkey

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(2) A few occurrences of responses of the type "He is sure of what he is saying" were included in the category SURE ACCUSED.

(7) NOT SURE:
Il est pas sûr (que c'est le lapin)
He is not sure (that it's the rabbit)

Responses of the type SURE ACCUSED and NOT SURE were quite frequent (46% and 44%, respectively), in comparison to responses of the type SURE OTHER, which were rare (10%).

The distribution of these three response categories shows clear developmental progressions. Combining all experimental conditions, most of the children's responses consisted of the category SURE ACCUSED at 4 years (56%) and at 6 years (51%), while these responses decreased at 8 years (35%). This decrease of the category SURE ACCUSED between 6 and 8 years was accompanied by an increase of the category NOT SURE (from 35% at 4 and 6 years to 57% at 8 years). As for the category SURE OTHER, it was mostly found at 6 years (14% of the responses). Overall, then, this developmental progression shows that children have a greater tendency after 6 years to attribute to the speaker a state of uncertainty.

One of the experimental conditions was paradigmatic of a situation of certainty, namely the one in which the following properties were combined: the boy witnessed the action, he produced a simple assertion, and this accusation was true, i.e. the proposition corresponded to the facts which had taken place during the film. Indeed, regardless of age, children produced only responses of the type SURE ACCUSED in this situation (see Fig. 1).

Three factors elicited the attribution of a state of uncertainty: the accusation in the target utterance was false, it was modalized (i.e., "I think that..."), and the speaker was absent when the target event had occurred. The combination of these three properties maximized responses of the type NOT SURE: thus, as shown in figure 8, all children in all age groups produced responses of the type NOT SURE in the situation NOT WITNESS - MODALIZED ASSERTION - FALSE.

Although all three of these factors play a role in the attribution of uncertainty, the effect of each varies with age. For the youngest children the falsity of the accusation was the most important factor: thus, the 4 year-olds rarely responded NOT SURE in conditions of the type TRUE ASSERTION (18%), frequently in conditions of the type FALSE ASSERTION (62%). In comparison, the absence of the speaker during the event had a smaller effect on the frequencies of the 4 year-olds' responses NOT SURE and the use of the modal verb CROIRE had no effect. At 6 years the falsity of the accusation continues to play the most important role in the frequencies of NOT SURE responses (12% in conditions of the type TRUE ASSERTION, 53% in conditions FALSE ASSERTION). In addition, the presence of a modal verb begins to play a role in this type of response. However, the most striking result at this age is that the absence of the speaker seems to have no effect on children's attribution of uncertainty: as shown in figures 3 and 7, the 6 year-olds responded SURE ACCUSED, rather than NOT SURE, in conditions of the type SPEAKER ABSENT. As shown in figures 2, 3, and 5, it is not until 8 years that all three factors play an equal role in children's responses. Thus, the effect of the factor truth/falsity, which was predominant until 6 years, decreases at 8 years, while the effect of the factor presence/absence of the speaker becomes predominant. In addition, the factor modality, which begins to have an effect at 6 years, increases at 8 years.

The category SURE OTHER only occurred in situations where the speaker had witenessed the event and produced a false accusation (conditions of the type WITNESS - FALSE ASSERTION). These responses, then, highlighted the falsity of the accusation in relation to the real facts. This response category, therefore, is not opposed to the category NOT SURE, but rather complements or strengthens it. Some responses in fact combined both categories, e.g., "He is not sure that it is X, he is sure that it is Y".

2. Children's qualifications concerning the predicate SURE/NOT SURE

Children sometimes qualified their responses concerning the epistemic state of the speaker, so that within the above three-category distinction the responses were not always clear-cut. These qualifications consisted of modifying the predicate SURE/NOT SURE, e.g., "I think that he is sure", "he is not very sure", "he cannot be so sure", etc. The frequencies of such qualifications increased with age, particularly between 6 and 8 years (2 occurrences at 4 years, 7 at 6 years, 25 at 8 years). They occurred approximately as often with the predicate SURE (22% always with responses of the type SURE ACCUSED) as with the predicate NOT SURE (26%). In both cases they typically weakened the degree of certainty or uncertainty, with the exception of a few cases where they strengthened the degree of uncertainty. Children used several types of devices for such qualifications (cf. Table I), the frequencies of which seemed to vary as a function of whether the predicate was SURE or NOT SURE. With the predicate SURE children mostly indicated their own uncertainty with utterances such as "I think that he is sure" and at 8 years they also added circumstantial elements, e.g., "in the story he is sure". With the predicate NOT SURE most qualifications consisted of adverbial expressions (80%), such as "he is not very/really sure", most of which were used by the 8 year-olds.

3. Children's explanations of the speaker's epistemic state

Children's attributions of the epistemic state were typically accompanied by comments (often requested by the experimentator), most of which consisted of justifying the response in the form of "explanatory comments" (3). These explanatory comments presented an argument which consisted either of an explicit explanation of the speaker's epistemic state (e.g., "he is sure because he saw it happen") or of some element complementing this state (e.g., "he is sure, he knows very well who it is").

There were five major types of explanations, which differed with respect to their content:

1. References to the speaker's perception: children mentioned that the

speaker had or had not seen the event;

2. References to the speaker's cognitive state or activity: children attributed to the speaker some cognitive state or activity, using other epistemic expressions which paraphrased the predicates SURE or NOT SURE (e.g., "he knows...", "he thinks/believes...", "he does not know...").

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(3) Children produced a few other comments of a "contrastive" type, whereby they mentioned an element (state of affairs, utterance) that was inconsistent with the epistemic state attributed to the speaker.

3. References to states of affairs: children jusfified the speaker's epistemic state by mentioning the events as they had unfolded (e.g., "because it is X who did it", "because it is not X but Y"); the epistemic state is in this case explained on the basis of whether or not the proposition conformed to reality;

4. References to indices: children mentioned some intrinsic characteristics of the animals or some aspect of the situation which could have served as indices on the basis of which the speaker could have been certain or uncertain (e.g., "because X was hiding", "because X was standing next to the cup", "because lions have big teeth");

5. References to the speaker's utterance: children mentioned the target utterance itself, i.e., the fact that the speaker had produced this utterance rather than another, as the most relevant feature in order to attribute to him a state of certainty or of uncertainty ("because he said..."). Such responses either mentioned the utterance as a whole or focused on some more specific linguistic property, such as the presence of a modal verb.

At all ages, the most frequent explanations were references to the speaker's perception (38%), then to the speaker's cognitive state (21%). These two major types of explanations remained fairly stable across the three age groups. In contrast, the other three types of explanations were less frequent and showed some progression: references to objective states

of affairs (12%) were predominant in the 4-5 year-olds and gradually decreased with age; references to indices (14%) increased with age, especially at 6 years; references to the speaker's utterance (14%) also increased, but they were more typical of the 8-year-olds (cf. fig. 9).

All these types of explanations justified the category SURE ACCUSED (in contrast to the category SURE OTHER, with which only references to the speaker's perception and cognitive state were found). However, two types of explanations were mostly used to explain certainty (in contrast to uncertainty, with which they were less frequent): references to the speaker's perception and to indices.

Certainty is mainly justified through perceptive evidence: the speaker is said "to be sure" "because he saw" when he was present; when he was absent the children sometimes chose to modify the data of the scenario, e.g., explaining that he was sure "because he had a look". At all ages, certainty is also defined by reference to another epistemic state expressed by the verb "to know" which is given as equivalent of "He is sure", e.g., "He knows that it is X", "He knows very well who it is". It is to be noted that at 4-5 years the use of "to think/believe" can also convey an idea of certainty ("He is sure, surely he thinks he did it, it's the monkey"), whereas it is no longer the case with older subjects. Certainty is also defined, mainly with the youngest subjects, by the truth value of its object, i.e., by the fact that it does correspond to reality: "He is sure that it is the monkey, because he did it". This type of response is based on the equivalence certainty = truth. In addition, from 6-7 years on, certainty is defined as a state which is quite close to a conviction inferred from properties of the situation or of the characters (indices). Indices, that are invoked only in the conditions where the speaker did not witness the action are preferentially perceived by subjects as a factor of certainty rather of uncertainty. Finally, certainty is inferred by the oldest children simply from the fact that the speaker has uttered his accusation in the form of a simple assertion: "He said: 'it's the hippopotamus who spilled the sweeties', so he is sure".

All these types of explanation are also used to justify the category "NOT SURE", in an even more heterogeneous way than for the category "SURE". References to the speaker's perception are used to explain uncertainty, although less often than for certainty. In this case bad perception is

invoked: the speaker is not sure "because he did not see" when he did not witness the event, or sometimes when he was present during the action, "because he didn't see well", "because he didn't watch". Uncertainty is mainly explained by references to the speaker's cognition and essentially by means of the verbs "to know" and "to think" in the negative form (e.g., "he doesn't really know", "he doesn't know if", "he can't know" ...). The use of the form "he thinks" to paraphrase uncertainty ("he is not sure, he thinks") becomes systematic from 6-7 years on, while the youngest subjects seem to associate it with certainty. Another explanation, that is paradoxically more frequent to justify uncertainty than certainty consists of invoking the state of affairs: the speaker is said not to be sure, because his utterance does not correspond to reality: "He wasn't sure it was the fox; because it was the bear". The equivalence established between certainty and the truth of the content therefore corresponds to the equivalence uncertainty = falsity. Finally, references to the speaker's utterance also seem to be slightly more frequent to justify uncertainty; the presence of the modality -"I think" (which is sometimes modified in the restitution) encourages the oldest children (6- and especially 8-year-old) to infer a state of uncertainty on the part of the speaker, e.g., "He is not quite sure, because he said 'it must be the owl'. When one says that, it means that one is not sure. If one was sure, one would say 'it is the owl'". However, it should be noted that for the youngest children modality can be associated with certainty, e.g., "He was sure that it was the frog, because he said 'I think it's the frog who spoiled...'".

Conclusion

The analysis presented here focused on children's judgments concerning the uses of modal expressions representing the certainty and uncertainty of a speaker ("he is sure / not sure") given various aspects of his utterance and its relation to the speech situation. The main results of this analysis can be summarized as follows.

(1) In contrast to the 8-year-old children, the 4- and 6-year-old children prefer to attribute to the target speaker a state of certainty, rather than a state of uncertainty. The attribution of uncertainty increases from 4-6 to 8 years, indicating a developmental progression in

children's ability to recognize the conditions which characterize uncertainty.

(2) The factors which determine how children attribute an epistemic state of certainty or uncertainty differ at 4, 6, and 8 years. Until 6 years children are mainly influenced by the truth/falsity of the accusation produced by the speaker. In particular, children attribute a state of uncertainty to the speaker when the target utterance is false. It is not until 8 years that children also take into account other factors, namely whether the speaker was present vs. absent during the target event and whether his utterance was a simple vs. a modalized assertion. At this age they attribute a state of uncertainty to the speaker if he had not witnessed the target event directly and if his utterance contained modal devices indicating some degree of doubt on his part ("I think/believe that p").

(3) The explanatatory comments produced by children to justify explicitly their choices of epistemic states fall into five main caategories, the frequencies of which vary at 4, 6, and 8 years. At all ages children referred to the speaker's perception, i.e., to whether the speaker had seen the target event. This type of explanation consisted of justifying a state of certainty as resulting from perceptual evidence ("he is sure because he saw it") and a state of uncertainty as resulting from the lack of such evidence ("he is not sure because he did not see it"). At all ages children also referred to the speaker's cognition, establishing relations among different expressions representing cognitive states and processes. Certainty is described by means of the verb SAVOIR ('to know'), uncertainty by means of its negative form NE PAS SAVOIR ("not to know'). The verb CROIRE ('think/believe') tends to be used by the 4 year-old children in relation to certainty ("he is sure, he knows"), whereas from 6 years on it is systematically used as a marker of doubt to paraphrase expressions representing uncertainty.

References to objective states of affairs are typical of the 4 year-old children: these children characterize epistemic states in relation to reality, defining certainty by the truth of the utterance ("he is sure that it is X because it is X") and uncertainty by its falsity ("he is not sure that is X because it is not X"). Another type of explanation is typical at 6 years, namely references to indices on the basis of which the speaker

could have made an inference: in this case certainty presented as resulting from a mental activity ("he is sure because X stayed there"). A third type of explanation increases at 8 years: these children justify the speaker's epistemic state by referring to the form of his utterance, in particular they explain uncertainty by the presence of modal devices ("he is not sure because he says 'I think'").

The different factors determining how children of different ages attribute epistemic states to the speaker, as well as how they justify these epistemic states, indicate a developmental progression in children's conceptions of the epistemic categories of certainty and uncertainty. The responses of the youngest children seem to be determined by a "realistic" conception of epistemic categories which is affected by the truth/falsity of utterances and characterized by frequent references to objective reality. This conception is accompanied by an overgeneralization of the category certainty; to this category children associate the verb CROIRE ("think/believe") which does not mark uncertainty at this age.

The 6-year-olds' responses show the appearance of a "subjective" conception of certainty which competes with the realistic conception during a transitional phase. Evidence for such a conception can be found in responses which are typical at this age and which consist of attributing a state of certainty to the speaker even if he had not directly witnessed the target event. This type of response is complemented by explanations characterized by references to indices. These children thus interpret certainty in a new way, defining it as the result of a deductive inference closely related to a conviction, rather than as the result of perceptual evidence or of conformity to reality. This developmental progression, then, is characterized by the idea that certainty is a subjective construction.

The responses of the 8-year-old children have properties which can be characterized by metalinguistic and relativized notions of certainty and uncertainty. These children often determine speakers' epistemic states on the basis of linguistic markings contained in their utterances and eplicitly refer to the meanings of these markings in their explanations. They clearly refer to the use of the modal verb CROIRE as a marking of uncertainty. At this age one also finds a clear increase in children's qualifications of the predicates SURE / NOT SURE resulting in more subtle response categories. Some of these qualifications, such as the addition of

circumstancial elements (e.g., "in the story he is sure") give an explicit frame of reference in which the attribution of an epistemic state is strengthened by "objective" events.

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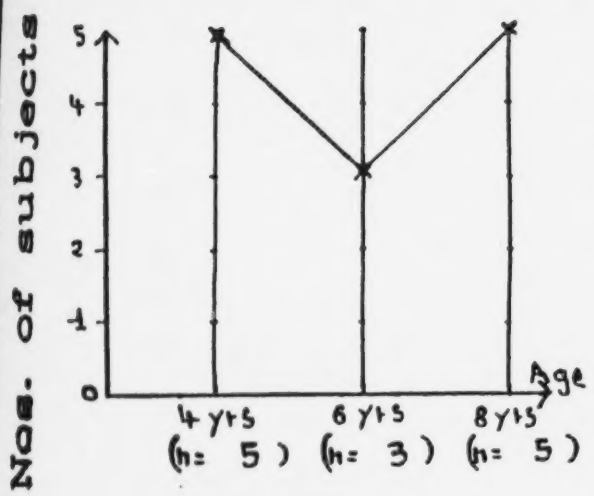

Figure 1

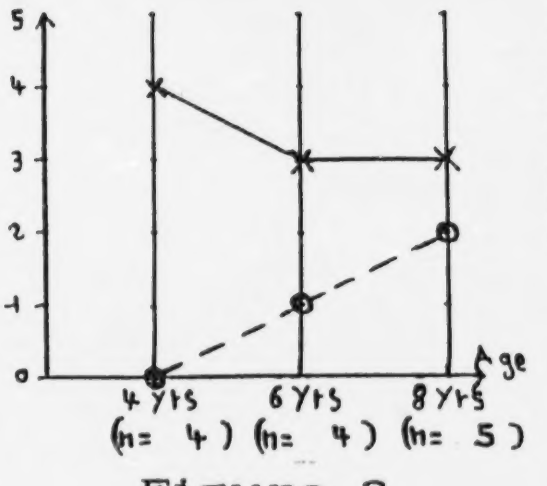

Figure 2

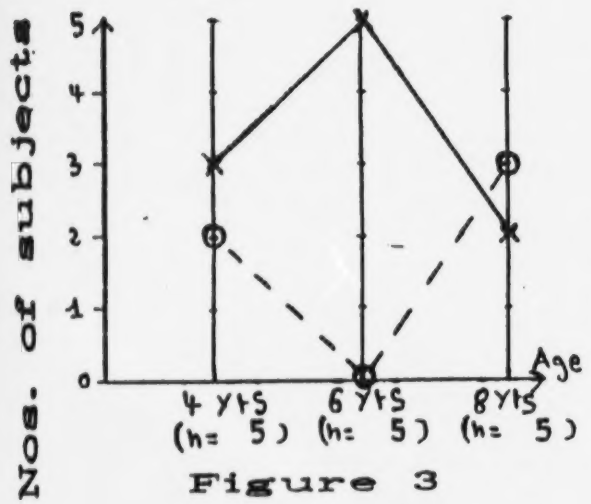

Figure 3

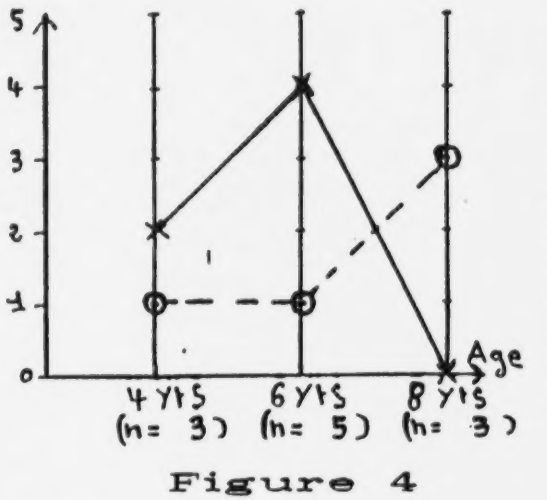

Figure 4

SIMPLE ASSERTION MODALIZED ASSERTION

Figures 1 to 4: Response Categories with True Target Utterances

NOT SURE

SURE ACCUSED

SURE OTHER

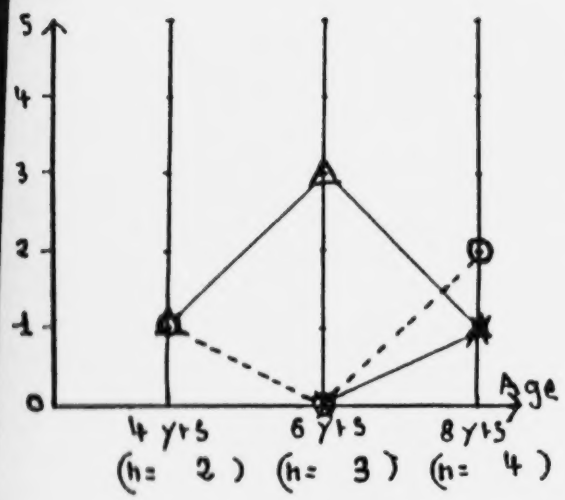

Figure 5

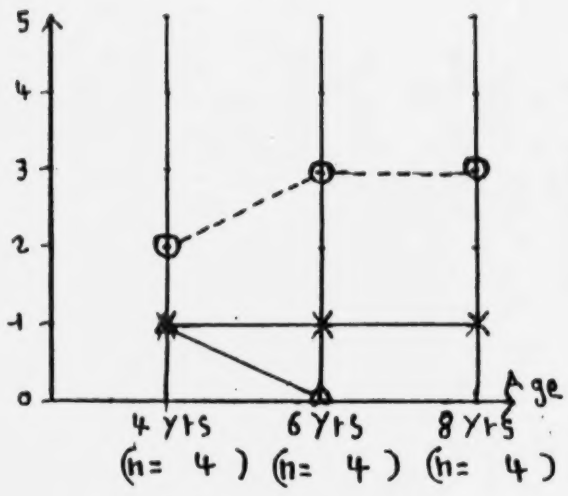

Figure 6

SPEAKER IS WITNESS

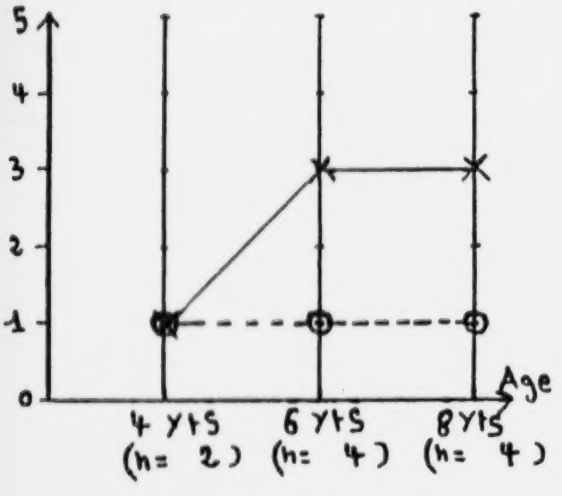

Figure 7

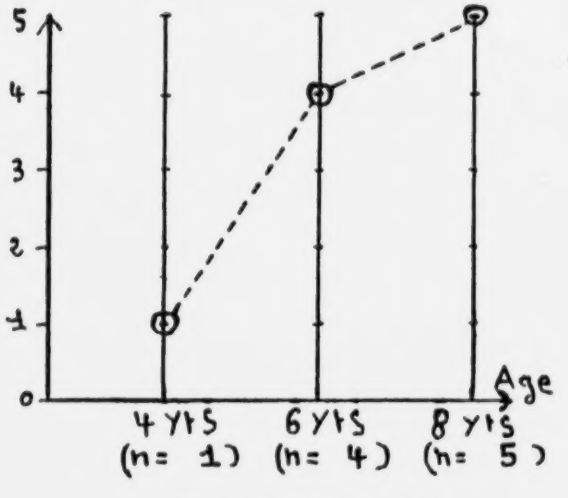

Figure 8

SPEAKER IS NOT WITNESS

SIMPLE ASSERTION MODALIZED ASSERTION

Figures 5 to 8: Response Categories with False Target Utterances

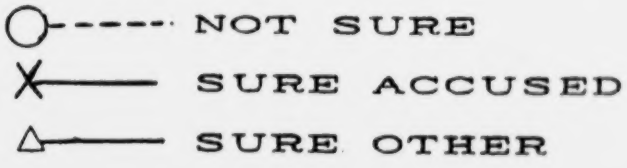

TABLE I : CHILDREN'S QUALIFICATIONS OF THE PREDICATE

SURE	4 years	6 years	8 years	Total
- Adverbial modifiers "un peu sûr" (a little sure) "sûr quand même" (nevertheless sure)	2	0	0	2
- Addition of a 1st person modal verb "je crois qu'il est sûr" (I think...)	0	4	5	9
- Addition of circumstancial elements "dans l'histoire il était sûr" (in the story he was sure) "en tout cas dans le film on aurait dit qu'il était sûr" (at any rate in the film it looked like he was sure) "quand il dit on croit qu'il est sûr" (when he says it, he seems to be sure)	0	0	5	5
	2	4	10	16

NOT SURE	4 years	6 years	8 years	Total
- Adverbial modifiers "pas très sûr" (not very sure) "pas trop sûr" (not too sure) "pas vraiment sûr" (not really sure) "pas sûr du tout" (not sure at all)	0	2	12	14
- Addition of a 1st person modal verb "je crois qu'il n'en est pas sûr" (I think he is not sure)	0	1	1	2
- Addition of a modal auxiliary "il doit pas être sûr" (he must not be sure) "il peut pas en être sûr" (he cannot be sure of it)	0	0	2	2
	0	3	15	18

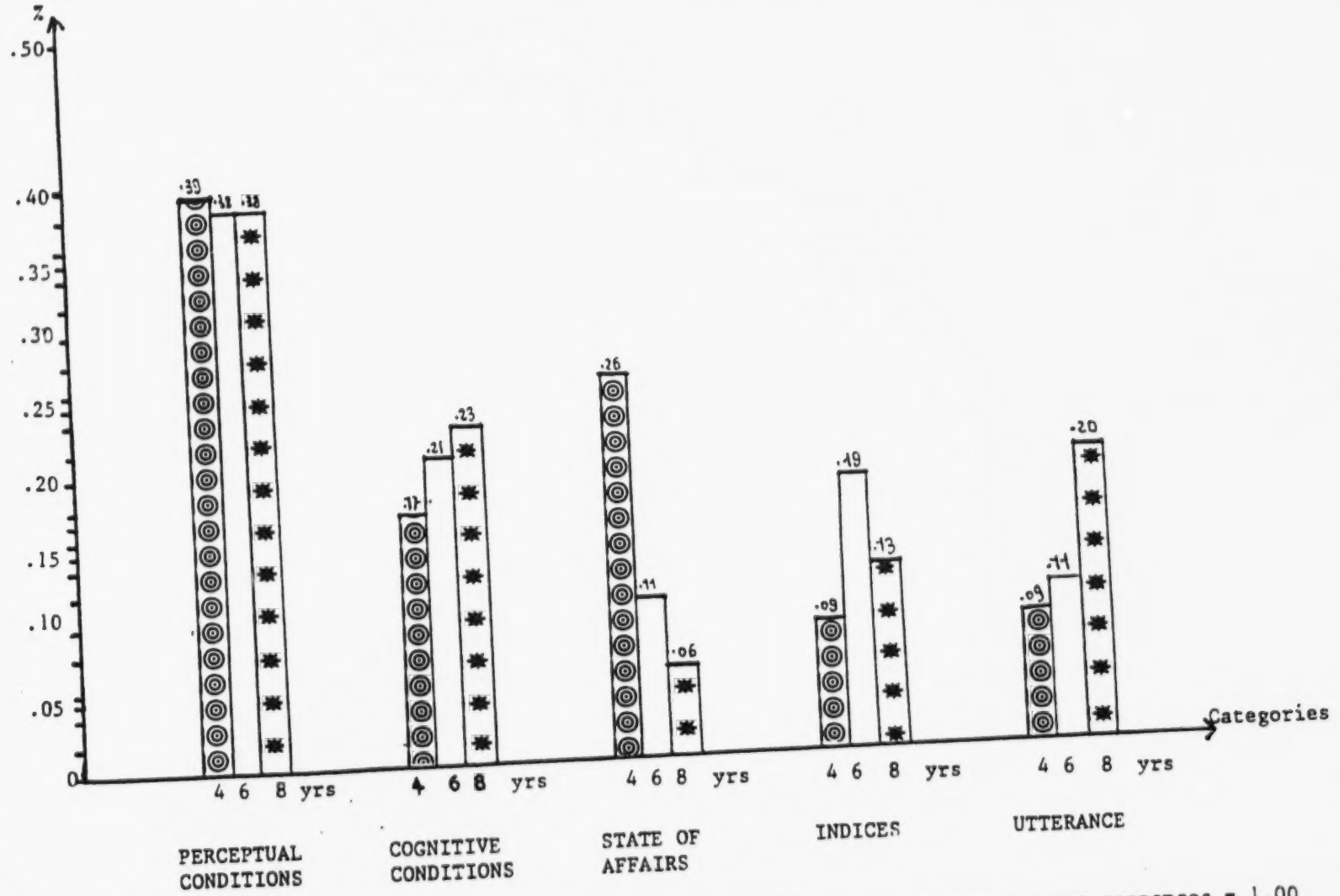

Figure 9: Categories of Explanatory Comments. Frequencies (Total number of explanatory comment responses = 1.00 for each age group)